

**PATENT ABSTRACTS OF JAPAN**

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**G03F 7/004**(21)Application number : **2001-029630**(71)Applicant : **FUJI PHOTO FILM CO LTD**(22)Date of filing : **06.02.2001**(72)Inventor : **YANAKA HIROMITSU**  
**MAEMOTO KAZUO**  
**AKIYAMA KEIJI****(54) ORIGINAL PLATE FOR LITHOGRAPHIC PRINTING PLATE**

(57)Abstract:

**PROBLEM TO BE SOLVED:** To provide an original plate for a lithographic printing plate with good press development properties and high sensitivity and good plate wear.

**SOLUTION:** This original plate for lithographic printing plate is characterized by having a heat-sensitive layer containing a hydrophobic polymer particle, a blocked isocyanate compound, a hydrophilic resin with a reactive group with isocyanate and a photo-thermal conversion substance and it is preferable that the hydrophobic polymer particle contains the photo-thermal conversion substance and has the reactive group with isocyanate.

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## CLAIMS

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[Claim(s)]

[Claim 1] The original edition for the lithography versions characterized by having the sensible-heat layer which contains a hydrophobic polymer particle, a blocking isocyanate compound, the hydrophilic resin that has the basis in which an isocyanate and a reaction are possible, and the light-and-heat conversion matter on a hydrophilic base material.

[Claim 2] The original edition for the lithography versions according to claim 1 characterized by the aforementioned hydrophobic polymer particle containing a light-and-heat conversion agent.

[Claim 3] The original edition for the lithography versions according to claim 1 characterized by the aforementioned hydrophobic polymer having the basis in which an isocyanate and a reaction are possible.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the original edition for the lithography versions. It is related with the original edition [ the platemaking by the scanning exposure based on the digital signal is possible, and / it is possible to give the printed matter which does not have dirt at \*\*\*\*-proof / high sensitivity and quantity /, and ] for the lithography versions which a printing machine is equipped as it is and can be printed in more detail, without developing negatives.

[0002]

[Description of the Prior Art] Much researches are made about the lithographic plate for computer two-plate systems with progress remarkable in recent years. As what aims at solution of much more process rationalization and a waste fluid processing problem, without carrying out a development, after exposure, the original edition for the lithography versions which equips a printing machine with as it is and which can be printed is studied, and various methods are proposed in it.

[0003] There is a method called on-board development which removes the non-picture section of the original edition for printing by supplying dampening water and ink, equipping the cylinder of a printing machine with the original edition [ finishing / exposure ] for the lithography versions, and rotating a cylinder to one of the methods which loses down stream processing. That is, it is the method which equips a printing machine with as it is and which processing completes in the usual printing process after exposing the original edition for printing. For the original edition for the lithography versions suitable for such on-board development to have a meltable photosensitive layer (sensible-heat layer) in dampening water or an ink solvent, and to have the Ming room handling nature suitable for moreover negatives being developed on the printing machine put on the Ming room is needed.

[0004] For example, the original edition for the lithography versions which prepared the photosensitive layer which distributed the particle of a thermoplastic hydrophobic polymer in hydrophilic binder polymer on the hydrophilic base material is indicated by Japanese JP,2938397,B. After carrying out infrared-laser exposure, making this official report coalesce with heat and carrying out image formation of the particle of a thermoplastic hydrophobic polymer to it in this original edition for the lithography versions, a version is attached on a printing machine cylinder and it is indicated that on-board development can be carried out in dampening water and/or ink. Moreover, producing the printing version by on-board development after coalesce according a thermoplastic particle to heat also in JP,9-127683,A and WO No. 10186 [ 99 to ] official report is indicated.

[0005]

[Problem(s) to be Solved by the Invention] However, the method of making a picture from fusion of the particle by the above heat etc. had low sensitivity, and had the problem which \*\*\*\*-proof [ quantity ] cannot obtain easily. Therefore, the purpose of this invention is solving this problem, namely, is having good on-board development nature and offering the good original edition for the lithography versions of \*\*\*\*-proof by high sensitivity moreover.

[0006]

[Means for Solving the Problem] That the above-mentioned purpose should be attained, this invention person etc. found out conquering the fault of the aforementioned conventional technology by adopting the following composition, as a result of inquiring wholeheartedly. That is, this invention is as follows.

(1) The original edition for the lithography versions which has the sensible-heat layer which contains a hydrophobic polymer particle, a blocking isocyanate compound, the hydrophilic resin that has the basis in which an isocyanate and a reaction are possible, and the light-and-heat conversion matter on a hydrophilic base material.

(2) The original edition for the lithography versions of the aforementioned (1) publication characterized by the aforementioned hydrophobic polymer particle containing a light-and-heat conversion agent.

(3) The original edition for the lithography versions of the aforementioned (1) publication characterized by the aforementioned hydrophobic polymer having the basis in which an isocyanate and a reaction are possible.

[0007] The negative for lithography of this invention is the original edition for the on-board development type lithography versions which attaches on a printing machine cylinder and produces the printing version by on-board development in dampening water and ink, after performing and carrying out image formation of the infrared-laser exposure. A printing machine is equipped with the negative for lithography of this invention, without the isocyanate compound generated in image WAIZU by exposure spoiling on-board development nature for a hydrophilic resin hydrophobing or by constructing a bridge in a sensible-heat layer, the unexposed section can be easily removed by supplying dampening water and ink, and it is based on discovery that the improvement in print durability of the exposure section is obtained. As mentioned above, the original edition for the lithography versions of this invention can form a picture by scanning laser exposure based on digital exposure. With the heat generated by irradiation of laser exposure, the hydrophobic polymer particle contained in a sensible-heat layer carries out heat weld partially at least, and the blocking agent of a blocking isocyanate compound dissociates simultaneously. the isocyanate machine which separated -- the functional group of a hydrophilic resin -- reacting -- a hydrophilic resin -- hydrophobing -- or a bridge is made to construct By the conventional method, a hydrophilic resin remains in the picture section and the dampening water to the picture section is called in at the time of printing. This weakened picture intensity remarkably and was reducing \*\*\*\*-proof. In this invention, a hydrophilic resin is decreased with an isocyanate compound, osmosis of the dampening water to the picture section is decreased hydrophobing or by constructing a bridge, and it is presumed by improvement in the picture section intensity by bridge formation that \*\*\*\*-proof improved. By this, the unexposed section becomes what excelled [ high sensitivity ] in \*\*\*\*-proof, while good on-board development nature is shown.

[0008]

[Embodiments of the Invention] The original edition for the lithography versions of this invention is explained in detail below. The original edition for the lithography versions of this invention has the sensible-heat layer formed on the hydrophilic base material as mentioned above by applying the coating liquid containing the constituent containing a hydrophobic polymer particle, a blocking isocyanate compound, the hydrophilic resin that has the basis in which an isocyanate and a reaction are possible, and the light-and-heat conversion matter. First, the sensible-heat layer which is the feature portion of the original edition for the lithography versions of this invention is explained.

[0009] (Sensible-heat layer) The sensible-heat layer of this invention contains a hydrophobic polymer particle.

(Hydrophobic polymer particle) A hydrophobic polymer particle is a polymer particle partially welded at least with heat here, and the polymer particle which can be adjusted by well-known synthesis methods, such as an emulsion-polymerization method, a soap free emulsion-polymerization method, a seed polymerization method, a distributed polymerization method, the solvent evaporating method, a suspension-polymerization method, the coacervation method, interfacial polymerization, and the spray-drying method, can be applied. Structurally, a microcapsule, core-shell structure, porous structure, a variant particle, etc. are applicable. The particle which was adjusted by the emulsion-polymerization method, the soap free emulsion-polymerization method, the solvent evaporating method, etc., and was

distributed especially underwater is desirable in respect of the plain-gauze fibers for plastering of sensitized material production, heat weld nature, on-board development nature, etc.

[0010] as a hydrophobic polymer -- a particle -- the well-known thermoplastic polymer and the thermosetting polymer can be used [-izing / polymer] The molecular weight of polymer has the desirable thing of 3000-1 million. As suitable thermoplastic particle polymer for this invention, it is ResearchDisclosure in January, 1992. The thermoplastic particle polymer of a publication can be mentioned to a No.33303, JP,9-123387,A, 9-131850 official report, 9-171249 official report, 9-171250 official report, and EP No. 931647 official report etc. as a suitable thing. As an example, the homopolymer, the copolymers, or those mixture of a monomer, such as ethylene, styrene, a vinyl chloride, a methyl acrylate, an ethyl acrylate, a methyl methacrylate, an ethyl methacrylate, a vinylidene chloride, acrylonitrile, and vinylcarbazole, can be mentioned.

[0011] The polymer which has the active hydrogen machine which reacts with an isocyanate is still more desirable in a molecule, and the thing containing especially a hydroxyl, a carboxyl group, and the amino group is desirable. Specifically, amino-group content polymer, such as carboxyl groups, such as a hydroxy group and the poly (meta) acrylic-acid copolymers, such as a polyether polyol, a polyester polyol, an acrylic polyol, a polyhydroxyethyl (meta) acrylate copolymer, and polystyrene / allyl alcohol copolymer, and a styrene maleic anhydride copolymer, an aminoethyl methacrylate copolymer, a polyethyleneimine copolymer, and the poly allylamine copolymer, is mentioned.

[0012] As a thermosetting suitable polymer particle for this invention, the resin which has a phenol frame, a urea system resin (for example, thing which resinified the ureas derivative, such as a urea or a methoxymethyl-ized urea, by aldehydes, such as formaldehyde), a melamine system resin (for example, thing which resinified a melamine or its derivative by aldehydes, such as formaldehyde), alkyl resin, an unsaturated polyester resin, a polyurethane resin, an epoxy resin, etc. can be mentioned.

[0013] The methacrylate which has phenol frames, such as methacrylamide which has phenol frames, such as phenol resin which resinified a phenol, cresol, etc. by aldehydes, such as formaldehyde, hydroxy styrene resin, and N-(p-hydroxyphenyl) methacrylamide, as a resin which has a suitable phenol frame, for example or an acrylamide resin, and p-hydroxyphenyl methacrylate, or an acrylate resin can be mentioned. An isocyanate, the resin which has the phenol skeleton which has the functional group which can react, an epoxy resin and melamine resin, a urea-resin, and a polyurethane resin are desirable especially.

[0014] Although the mean particle diameter of a hydrophobic polymer particle has desirable 0.01-3 micrometers, also in it, its 0.05-1.0 micrometers are still more desirable, and especially its 0.02-0.4 micrometers are desirable. In this range, good resolution and stability with the passage of time are acquired.

[0015] Moreover, 40% of the weight or more of the solid content of a sensible-heat layer of the addition of a hydrophobic polymer particle is desirable, and its 60 % of the weight or more is still more desirable. Simultaneously with good on-board development nature, good sensitivity and \*\*\*\*-proof are obtained in this range.

[0016] (Hydrophilic resin) As a hydrophilic resin, the thing containing a reaction machine with an isocyanate, for example, a hydroxy group, the amino group, a carboxy group, an amide group, and a sulfhydryl group is applicable.

[0017] As an example of a hydrophilic resin, gum arabic, casein, gelatin, a starch derivative, SOYAGAMU, hydroxypropylcellulose, a methyl cellulose, a carboxymethyl cellulose, and its sodium salt, A cellulose acetate, a sodium alginate, a vinyl acetate-maleic-acid copolymer, Styrene-maleic-acid copolymers, polyacrylic acids, and those salts, The homopolymer and copolymer of polymethacrylic acids and those salts, and hydroxyethyl methacrylate, The homopolymer and copolymer of the homopolymer of hydroxyethyl acrylate and a copolymer, and hydroxypropyl methacrylate, The homopolymer and copolymer of hydroxypropyl acrylate, The homopolymer and copolymer of hydroxy butyl methacrylate, The homopolymer of hydroxy butyl acrylate and a copolymer, and polyethylene glycols The degree of hydrolysis in hydroxy propylene polymer, polyvinyl alcohol, and a row At least 60 % of the weight, Preferably At least 80% of the weight of a hydrolysis polyvinyl acetate, The

homopolymer and copolymer of a polyvinyl formal, a polyvinyl pyrrolidone, and an acrylamide, The homopolymer and copolymer of the homopolymer of methacrylamide and a copolymer, and N-MECHIRORU acrylamide, The homopolymer of a 2-acrylamide-2-methyl-1-propane sulfonic acid and a copolymer, the homopolymer of 2-METAKURO yloxy ethyl phosphonic acid and a copolymer, the poly allylamine, polyethyleneimine, etc. can be mentioned.

[0018] 5 - 70% of the solid content of a sensible-heat layer of the addition to the sensible-heat layer of a hydrophilic resin is desirable, and it is still more desirable. [ 5 - 40% of ] Within the limits of this, good on-board development nature and a good film strength are obtained, and it is desirable.

[0019] (Blocking isocyanate compound) A blocking isocyanate compound is a compound which blocked the isocyanate machine of an isocyanate compound chemically. An aromatic system well-known as an isocyanate and an aliphatic system compound are applicable. Single organic-functions isocyanates, such as phenyl isocyanate, tolyl isocyanate, 2, and 5-dimethyl isocyanate, can also be used. The compound which has two or more isocyanate machines in one molecule like tolylene diisocyanate, diphenylmethane diisocyanate, a polymethylene polyphenyl poly isocyanate, xylylene diisocyanate, naphthalene diisocyanate, cyclohexane phenylene diisocyanate, isophorone diisocyanate, hexamethylene di-isocyanate, and cyclohexyl diisocyanate is more desirable. Moreover, a prepolymer which has an isocyanate machine in an end can also be used.

[0020] Although a well-known thing can be used as a blocking agent For example, a phenol, cresol, a xylenol, a naphthol, p-nitrophenol, Phenols, such as p-chlorophenol, a GUAIYA call, a catechol, and a resorcinol, Lactams, such as an epsilon caprolactam, methylethyl ketoxime, the aceto oxime, Oximes, such as a butanone oxime and a cyclohexanone oxime, 2-formyloxy ethyl (meta) acrylate, Formyloxy one, such as 2-formyloxy ethyl propionate, a methanol, Ethanol, propanol, a butanol, ethylene glycol, benzyl alcohol, Alcohols, such as a propylene glycol monomethyl ether and an isopropanol, Activity methylenes, such as an acetylacetone, an ethyl acetoacetate, and a diethyl malonate Diethylamine, diphenylamine, dibutyl-amine, aniline, N, and N-dimethylhydrazine, Amines, such as a N phenylnaphthylamine and a carbazole, an imidazole, 2-methyl imidazole, 2-ethyl imidazole, 2-phenyl imidazole, 2, 4-diamino-6 {2'-methyl imidazole (1')} ethyl-s-triazine, Hydrophilic blocking agents, such as a basic nitrogen content compound, acid sodium sulfites, etc., such as heterocyclic-compounds [ , such as a benzotriazol ], N, and N-diethylhydroxylamine and a hydroxy pyridine, etc. are mentioned. The compound dissociated below 80 degrees C or more especially 200 degrees C is desirable.

[0021] With the reaction blocked chemically, when for example, a blocking agent reacts with hydroxyl groups (general formula R-OH), such as alcohol, a phenol, and an oxime, and an isocyanate compound (general formula R'-N=C=O), a urethane bond is formed like R-O-CO-NH-R' of an addition reaction. Moreover, when reacting with an active hydrogen compound (-CH<sub>2</sub>-) like an acetylacetone, amide combination is formed, and urea combination is formed when a blocking agent is an amino group. Thus, although all reactions are addition reactions, the blocking isocyanate compound from which combination to generate differed by the blocking agent is formed.

[0022] These blocking isocyanate compounds are suitable dispersants like polyvinyl alcohol, and it can be made to be able to distribute underwater or they can be added in the state where it was made to dissolve in a solvent. When making it distribute and adding, it is desirable to add as a particle mixed with the light-and-heat conversion agent. It can introduce into a sensible-heat layer by furthermore containing in a hydrophobic polymer particle. The addition of a blocking isocyanate compound has 5 - 90 desirable % of the weight in a sensible-heat layer constituent, and it is 5 - 50 % of the weight more preferably.

[0023] In this invention, or it promotes the maceration of the blocking isocyanate compound at the time of heating, in order to promote the reaction of an isocyanate and a hydrophilic resin functional group, a well-known catalyst can be contained in a sensible-heat layer. Djibouti rutin JIRAURI rate, dimethyl stannic-chloride, trimethyl tin hydroxide, stannic-chloride, tetrapod-n-butyl tin, stannous-chloride, OKUTOE acid tin, bismuth-nitrate, zinc-naphthenate, naphthenic-acid cobalt, antimony-trioxide, titanic-acid, tetramethyl butanediamine, 1, and 4-diazabicyclo [2, 2, 2] octane, a triethylamine, etc. are mentioned as an example. These combine and may be used.

[0024] (Light-and-heat conversion matter) The sensible-heat layer of this invention contains the light-and-heat conversion matter which absorbs infrared radiation and generates heat in order to raise sensitivity. As this light-and-heat conversion matter, various pigments, colors, and metal particles can be used that what is necessary is just the 700-1200nm optical-absorption matter which has an absorption band in part at least.

[0025] As a pigment, the pigment of the infrared-absorption nature indicated by a commercial pigment and a Color Index (C. I.) handbook, the "newest pigment handbook" (volume on Japanese pigment technical association, 1977 annual publications), the "newest pigment applied technology" (CMC publication, 1986 annual publications), and "printing ink technology" (CMC publication, 1984 annual publications) can be used.

[0026] Since these pigments raise the dispersibility over the layer added, well-known surface treatment can be performed and used for them if needed. In the method of surface treatment, the method of carrying out the surface coat of a hydrophilic resin or the lipophilic property resin, the method to which a surfactant is made to adhere, the method of combining the active substance (for example, a silica sol, an alumina sol, a silane coupling agent, an epoxy compound, an isocyanate compound, etc.) with a pigment front face, etc. can be considered. The pigment added in the layer of a hydrophilic property has that desirable to which the coat of the front face was carried out by the hydrophilic resin or the silica sol so that it may be easy to distribute with a water-soluble resin and a hydrophilic property may not be spoiled. As for the particle size of a pigment, it is desirable that it is in the range of 0.01 micrometers - 1 micrometer, and it is still more desirable that it is in the range which is 0.01 micrometers - 0.5 micrometers. As a method of distributing a pigment, the well-known distributed technology used for ink manufacture, toner manufacture, etc. can be used. As a desirable pigment, carbon black can be mentioned especially.

[0027] as a color, the well-known color indicated by a commercial color and reference (for example, development of the functionality coloring matter of the 90s, and the "near-infrared absorption coloring matter" "commercial-scene trend" chapter 2 2.3rd term (1990) -- CMC), or the patent can be used [ of "color handbook" Society of Synthetic Organic Chemistry, Japan edit, Showa 45 annual publications, and "chemical-industry" 1986 year 5 month number P.45-51 ] Specifically, infrared-absorption colors, such as azo dye, metallic complex azo dye, pyrazolone azo dye, an anthraquinone dye, a phthalocyanine dye, a carbonium color, a quinonimine dye, the poly methine dye, and cyanine dye, are desirable.

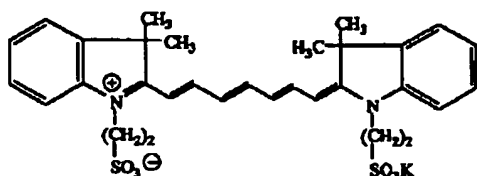
[0028] Furthermore, for example, JP,58-125246,A, JP,59-84356,A, Cyanine dye, JP,58-173696,A which are indicated by JP,60-78787,A etc., The methine dye indicated by JP,58-181690,A, JP,58-194595,A, etc., JP,58-112793,A, JP,58-224793,A, JP,59-48187,A, The naphthoquinone color indicated by JP,59-73996,A, JP,60-52940,A, JP,60-63744,A, etc., The SUKUWARIRIUMU color indicated by JP,58-112792,A etc., Cyanine dye given in British JP,434,875,B, and a color given in U.S. Pat. No. 4,756,993, Cyanine dye given in U.S. Pat. No. 4,973,572, a color given in JP,10-268512,A, and a phthalocyanine compound given in JP,11-235883,A can be mentioned.

[0029] Moreover, a near-infrared absorption sensitizer given in U.S. Pat. No. 5,156,938 is also suitably used as a color. Moreover, the ARIRUBENZO (thio) pyrylium salt by which the U.S. Pat. No. 3,881,924 publication was replaced, TORIME tin thia pyrylium salt given in JP,57-142645,A, JP,58-181051,A, 58-220143, 59-41363, 59-84248, The pyrylium system compound indicated by 59-84249, 59-146063, and 59-146061, Pentamethine thio pyrylium salt etc. and JP,5-13514,B given in cyanine dye given in JP,59-216146,A, and U.S. Pat. No. 4,283,475, the pyrylium compound currently indicated by the 5-19702 official report and the product made from EPORIN -- EPORAITO III-178, EPORAITO III-130, and EPORAITO III-125 grade are also used preferably A color desirable in these, although it adds in the hydrophilic matrix of the hydrophilic resin middle class of a sensible-heat layer is a water soluble dye, and shows an example below. However, this invention is not limited to these.

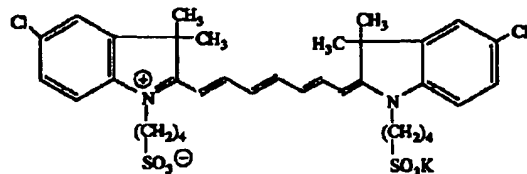
[0030]

[Formula 1]

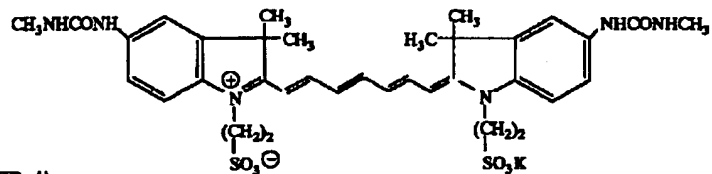
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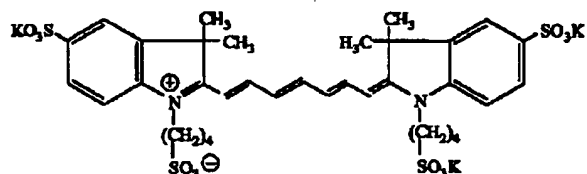
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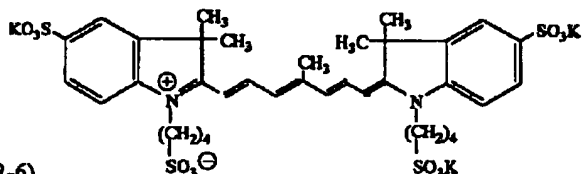
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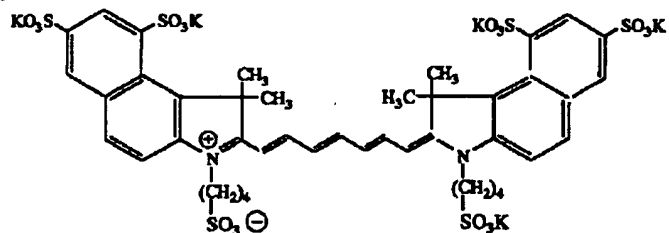
(IR-4)



(IR-5)



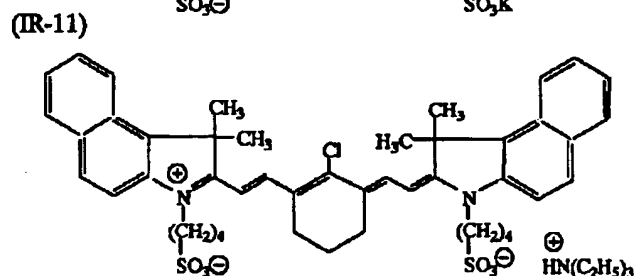
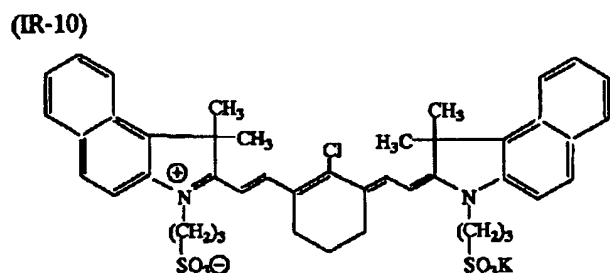
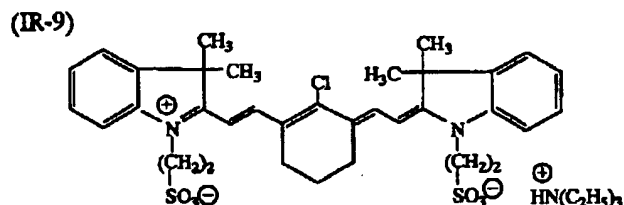
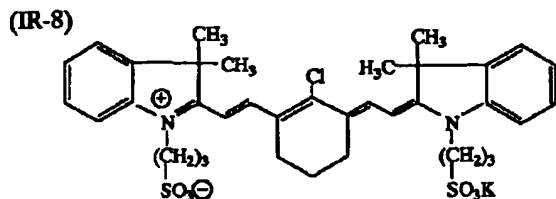
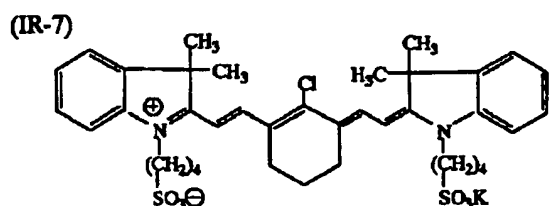
(IR-6)



[0031]

[Formula 2]

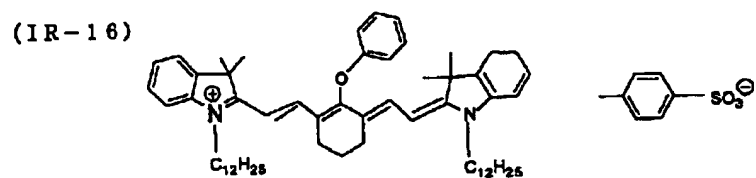
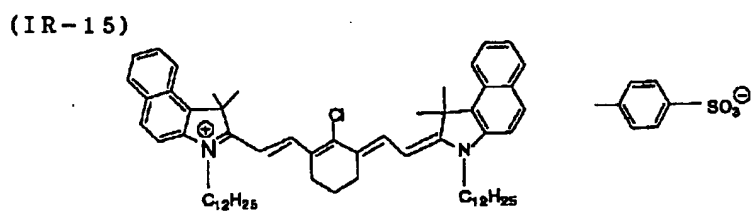
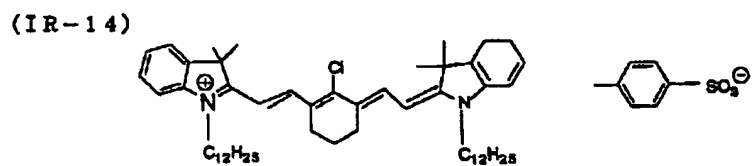
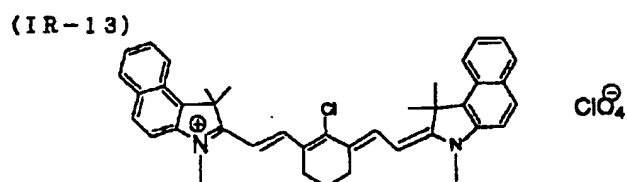
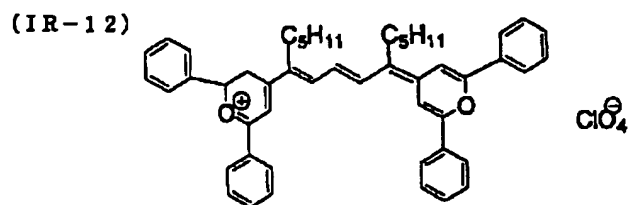




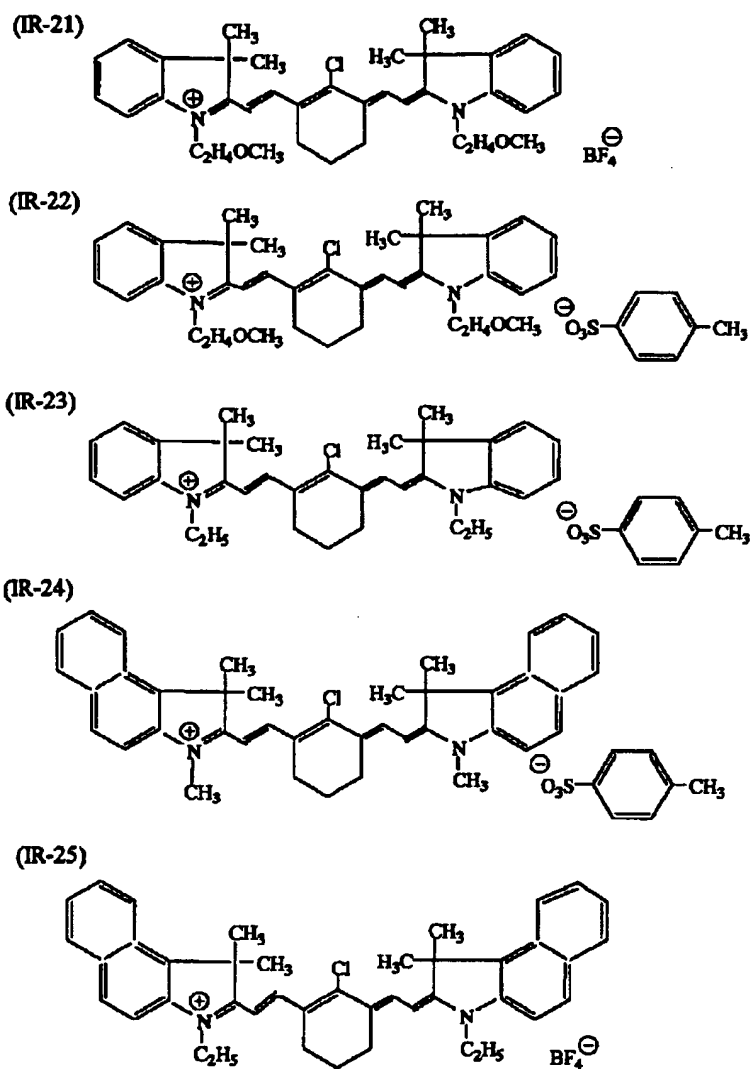
The light-and-heat conversion matter is making a light-and-heat conversion agent contain in a hydrophobic polymer particle, and progresses [ weld between particles ] more and is still more desirable. Although you may be the aforementioned light-and-heat conversion matter, the color of lipophilic property is more desirable. The following colors can be mentioned as an example.

[0032]

[Formula 3]

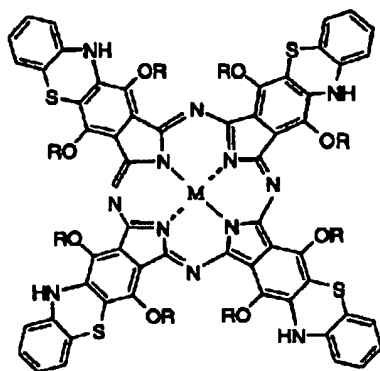


[0033]  
[Formula 4]

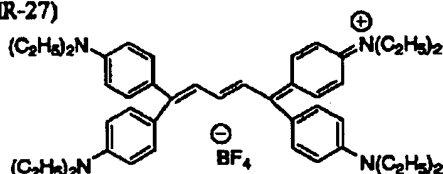


[0034]  
[Formula 5]

(IR-26)  $M=VO$ ,  $R=i-C_5H_{11}$



(IR-27)



[0035] The light-and-heat conversion agent of the above-mentioned organic system can be added to 30 % of the weight in a sensible-heat layer. It is 5 - 25 % of the weight preferably, and is 7 - 20 % of the weight especially preferably. Good sensitivity is obtained within the limits of this.

[0036] A metal particle can also be used for the sensible-heat layer of this invention as a light-and-heat conversion agent. Many of metal particles are light-and-heat conversion nature, and it is also self-febrility. As a desirable metal particle, the particle of the simple substance of Si, aluminum, Ti, V, Cr, Mn, Fe, Co, nickel, Cu, Zn, Y, Zr, Mo, Ag, Au, Pt, Pd, Rh, In, Sn, W, Te, Pb, germanium, Re, and Sb, alloys or those oxides, and a sulfide is mentioned. The melting points a metal desirable also in the metal which constitutes these metal particles tends to carry out [ the melting points ] heat weld by optical irradiation are infrared rays and the metal which has absorption in visible or an ultraviolet-rays field, for example, Re, Sb, Te, Au, Ag, Cu, germanium, Pb, and Sn, below about 1000 degrees C. Moreover, especially a desirable thing is the particle of a metal also with comparatively high melting point and absorbance [ as opposed to / it is comparatively low and / a heat ray ], for example, Ag, Au, Cu, Sb, germanium, and Pb, and especially desirable elements are Ag, Au, and Cu.

[0037] Moreover, you may consist of two or more sorts of light-and-heat conversion matter, such as carrying out mixed use of the particle of low melting point metals, such as Re, Sb, Te, Au, Ag, Cu, germanium, Pb, and Sn, and the particle of self-febrility metals, such as Ti, Cr, Fe, Co, nickel, W, and germanium, for example. Moreover, when it considers as minute pieces, such as Ag, Pt, and Pd, especially the thing to use combining the minute piece of a large metal kind and other metal minute pieces has a desirable optical absorption.

[0038] The particle of the metal simple substance stated above and an alloy is a book by hydrophilic-property--ization-processing a front face. The means of the formation of a surface hydrophilic property can be hydrophilic, surface treatment can be carried out with the compound which has the adsorptivity to a particle, for example, a surfactant, surface treatment can be carried out by the constituent of a particle, and the matter with the hydrophilic radical which reacts, or methods, such as preparing the hydrophilic macromolecule coat of protective colloid nature, can be used. Especially a desirable thing is surface silicate processing, for example, in the case of an iron particle, a front face can fully be hydrophilic-property-ized by the method immersed in 70-degree C sodium-silicate (3%) solution for 30 seconds. Other metal particles can perform surface silicate processing by the same method.

[0039] 10 micrometers or less of 0.003-5 micrometers of particle size of these particles are 0.01-3

micrometers especially preferably more preferably. Within the limits of this, good sensitivity and good resolution are obtained and it is desirable.

[0040] In this invention, when using these metal particles as a light-and-heat conversion agent, the addition is 10% of the weight or more of a sensible-heat layer solid content preferably, and is especially used at 30 % of the weight or more preferably 20% of the weight or more. Within the limits of this, high sensitivity is obtained and it is desirable.

[0041] Moreover, after image formation, since distinction of the picture section and the non-picture section is made easy to attach, the color which has big absorption in a light region can be used for the sensible-heat layer of this invention as a coloring agent of a picture. Specifically Oil yellow #101, oil yellow #103, oil pink #312, the oil green BG An oil blue BOS, oil-blue #603, oil black BY, Oil black BS, oil black T-505 (above product made from Orient Chemical industry), Victoria pure blue, a Crystal Violet (CI42555), A Methyl Violet (CI42535), ethyl violet, Rhodamine B (CI145170B), Colors indicated by JP,62-293247,A, such as a Malachite Green (CI42000) and a methylene blue (CI52015), can be mentioned. Moreover, pigments, such as a phthalocyanine system pigment, an azo system pigment, and titanium oxide, can also be used suitably. 0.01 - 10 % of the weight of an addition is desirable to a sensible-heat layer application liquid total solid.

[0042] Furthermore, if needed, in order to give the flexibility of a paint film etc., a plasticizer can be added to the sensible-heat layer of this invention. For example, a polyethylene glycol, a tributyl citrate, a diethyl phthalate, dibutyl phthalate, a phthalic-acid dihexyl, a dioctyl phthalate, tricresyl phosphate, tributyl phosphate, trioctyl phosphate, a tetrahydrofurfuryl oleate, etc. are used.

[0043] The sensible-heat layer of this invention dissolves or distributes each required above-mentioned component to a solvent, prepares application liquid, and is applied. As a solvent used here, ethylene dichloride, a cyclohexanone, A methyl ethyl ketone, a methanol, ethanol, propanol, an ethylene glycol monomethyl ether, 1-methoxy-2-propanol, 2-methoxy ethyl acetate, 1-methoxy-2-propyl acetate, dimethoxyethane, a methyl lactate, Although ethyl-lactate, N, and N-dimethylacetamide, N.N-dimethylformamide, a tetramethyl urea, N-methyl pyrrolidone, dimethyl sulfoxide, a sulfolane, gamma-butyl lactone, toluene, water, etc. can be mentioned, it is not limited to this. these solvents are independent -- or it is mixed and used The solid-content concentration of application liquid is 1 - 50 % of the weight preferably.

[0044] Moreover, although the sensible-heat layer coverage on the base material obtained after an application and dryness (solid content) changes with uses, generally its 0.5 - 5.0 g/m<sup>2</sup> is desirable. Various methods can be used as a method of applying. For example, a bar coating-machine application, a rotation application, a spray application, a curtain application, a DIP application, an air knife application, a blade application, a roll application, etc. can be mentioned.

[0045] In the sensible-heat layer application liquid in connection with this invention, the surfactant for improving application nature, for example, a fluorochemical surfactant which is indicated by JP,62-170950,A, can be added. a desirable addition -- 0.01- of a sensible-heat layer total solid -- it is 0.05 - 0.5 % of the weight still more preferably 1% of the weight

[0046] Since the negative for lithography of this invention protects the image formation layer front face of a hydrophilic property from contamination by the lipophilic property matter at the time of preservation, or the contamination (the remains of a fingerprint) by contact of the finger at the time of handling, a hydrophilic overcoat layer can be prepared on an image formation layer.

[0047] The hydrophilic overcoat layer used for this invention can be easily removed on a printing machine, and contains the resin chosen from the water bloating tendency resin which constructed the bridge partially in the water soluble resin or the water soluble resin.

[0048] This water soluble resin is chosen from water-soluble naturally-occurring polymers and a water-soluble synthetic macromolecule, and when application dryness is used and carried out with a water-soluble-resin independent or a cross linking agent, it can carry out film formation. As an example of the water soluble resin preferably used for this invention In naturally-occurring polymers, gum arabic, water-soluble soybean polysaccharide, a fibrin derivative for example, a carboxymethyl cellulose and a carboxy ethyl cellulose -- By the synthetic macromolecule, the denaturation objects, such as a methyl

cellulose, a white dextrin, a pullulan, a zymolysis etherification dextrin, etc. Polyvinyl alcohol (thing of 65% or more of adding-water cracking severity of polyvinyl acetate), A polyacrylic acid, its alkali-metal salt or an amine salt, a polyacrylic-acid copolymer, The alkali-metal salt or an amine salt, a polymethacrylic acid, its alkali-metal salt, or an amine salt, Vinyl alcohol / acrylic-acid copolymer and its alkali-metal salt, or an amine salt, A polyacrylamide, its copolymer, polyhydroxy ethyl acrylate, A polyvinyl pyrrolidone, its copolymer, a polyvinyl methyl ether, A vinyl methyl ether / maleic-anhydride copolymer, a Polly 2-acrylamide-2-methyl-1-propane sulfonic acid, The alkali-metal salt or an amine salt, a Polly 2-acrylamide-2-methyl-1-propane sulfonic-acid copolymer, its alkali-metal salt, or an amine salt can be mentioned. Moreover, according to the purpose, two or more sorts can be mixed and these resins can also be used. However, this invention is not limited to these examples.

[0049] When carrying out partial bridge formation of at least one or more sorts of a water soluble resin and forming an overcoat layer on a hydrophilic layer, bridge formation is performed by carrying out crosslinking reaction using the reactant functional group which a water soluble resin has. Even if crosslinking reaction is bridge formation of covalent-bond nature, it may be bridge formation of ionic bond nature.

[0050] Although the adhesiveness of an overcoat layer front face falls and the handling nature of the negative for lithography becomes good according to bridge formation, since an overcoat layer will change to lipophilic property and removal of the overcoat layer on a printing machine will become difficult if bridge formation progresses too much, moderate partial bridge formation is desirable. The grade of desirable partial bridge formation is a grade elution is accepted to be in 10 minutes or more, although the hydrophilic overcoat layer is not eluted and remains in [ 30 seconds - ] 10 minutes, when the negative for printing is dipped in underwater [ 25-degree C ].

[0051] As a compound (cross linking agent) used for crosslinking reaction, the well-known polyfunctional compound which has cross-linking is mentioned, and the poly epoxy compound, a polyamine compound, a polyisocyanate compound, the poly alkoxysilyl compound, a titanate compound, an aldehyde compound, a polyvalent-metallic-salt compound, a hydrazine, etc. are mentioned.

[0052] A cross linking agent can mix and use [ independent or ] two or more sorts. Among cross linking agents, although especially a desirable cross linking agent is a water-soluble cross linking agent, it can distribute and use the thing of non-water solubility for water with a dispersant.

[0053] As a combination of a desirable water soluble resin and a cross linking agent, a carboxylic-acid content water soluble resin / polyvalent metal compound, a carboxylic-acid content water soluble resin / water-soluble epoxy resin, a hydroxyl-group content resin / dialdehydes can be mentioned especially.

[0054] The suitable addition of a cross linking agent is 2 - 10% of the weight of a water soluble resin. Good water resistance is obtained without spoiling the removal nature of the overcoat layer on a printing machine within the limits of this.

[0055] In addition, in a solution application, a non-ion system surfactant can mainly be added for the purpose which secures the homogeneity of an application to an overcoat layer. As an example of such a nonionic surface active agent, sorbitan tristearate, sorbitan monopalmitate, a sorbitan trio rate, a stearin acid monoglyceride, the polyoxyethylene nonylphenyl ether, polyoxyethylene dodecylether, etc. can be mentioned. The rate for which it accounts in the total solid of the overcoat layer of the above-mentioned nonionic surface active agent has 0.05 - 5 desirable % of the weight, and it is 1 - 3 % of the weight more preferably.

[0056] When a bridge is not constructed over the water soluble resin in the thickness of the overcoat layer of this invention, 0.1 to 4.0 micrometers are 0.1 micrometers to 1.0 micrometers, and when partial bridge formation of the water soluble resin is carried out, the desirable still more desirable range has desirable 0.1-0.5 micrometers, and is more desirable. [ of 0.1-0.3 micrometers ] Within the limits of this, contamination of the hydrophilic layer by the lipophilic property matter can be prevented, without spoiling the removal nature of the overcoat layer on a printing machine.

[0057] In the negative for the lithography versions of this invention as a base material which can apply the aforementioned sensible-heat layer It is a tabular object stable in dimension. For example, paper,

plastics The paper (which for example, polyethylene, polypropylene, polystyrene, etc. laminated), Metal plates (for example, aluminum, zinc, copper, etc.), plastic film for example, a diacetyl cellulose, a cellulose triacetate, and a cellulose propionate -- A butanoic acid cellulose, a cellulose acetate butyrate, a cellulose nitrate, a polyethylene terephthalate, The metal like the above, such as polyethylene, polystyrene, polypropylene, a polycarbonate, and a polyvinyl acetal, is mentioned for a lamination, the paper by which vacuum evaporation was carried out, or plastic film. Polyester film or an aluminum plate is mentioned as a desirable base material.

[0058] This aluminum plate makes a pure-aluminium board and aluminum a principal component, it is an alloy board containing the different element of a minute amount, and plastics laminates it in the thin film of aluminum or an aluminium alloy further. There are silicon, iron, manganese, copper, magnesium, chromium, zinc, a bismuth, nickel, titanium, etc. in the different element contained in an aluminium alloy. The content of the different element in an alloy is at most 10 or less % of the weight. However, the aluminum plate of a material better known than before can also be suitably used for the aluminum plate applied to this invention.

[0059] The thickness of the above-mentioned substrate used by this invention is 0.15mm - 0.3mm especially preferably 0.1mm - 0.4mm preferably 0.05mm - 0.6mm.

[0060] It is desirable to precede using an aluminum plate and to carry out surface treatment, such as split-face-izing of a front face and anodic oxidation. With surface treatment, hydrophilic improvement and adhesive reservation with a sensible-heat layer become easy.

[0061] Although split-face-ized processing on the front face of an aluminum plate is performed by various methods, it is performed by the method of split-face-izing mechanically, for example, the method of forming a front face into a dissolution split face electrochemically, and the method of carrying out the selective dissolution of the front face chemically. As the mechanical method, well-known methods, such as the ball grinding method, a brushing method, the blast grinding method, and buffing, can be used. The method of flooding with the saturated-water solution of the aluminum salt of a mineral acid which is indicated by JP,54-31187,A as the chemical method is suitable. Moreover, there is the method of performing by an alternating current or direct current in the electrolytic solution which contains acids, such as a hydrochloric acid or a nitric acid, as an electrochemical split-face-ized method. Moreover, the electrolysis split-face-ized method using the mixed acid can also be used as indicated by JP,54-63902,A.

[0062] As for split-face-izing by the method like the above, it is desirable to be given in the range from which (Ra) is set to 0.2-1.0 micrometers in the center line average coarseness of the front face of an aluminum plate. Anodizing is performed, in order that the split-face-ized aluminum plate may raise abrasion resistance by request, after alkali etching processing is carried out using solution, such as a potassium hydroxide and a sodium hydroxide, if needed and neutralization processing is carried out further. As an electrolyte used for anodizing of an aluminum plate, use of the various electrolytes which form a porosity oxide film is possible, and, generally a sulfuric acid, a hydrochloric acid, oxalic acid, chromic acids, or those mixed acids are used. The concentration of those electrolytes is suitably decided according to an electrolytic kind. Although it cannot generally specify since the processing conditions of anodic oxidation change variously with the electrolyte to be used, if electrolytic concentration is 5-70 degrees C, current density 5 - 60 A/dm<sup>2</sup>, voltage 1-100V, and a range for 10 seconds - electrolysis time 5 minutes, generally it is suitable for a 1 - 80-% of the weight solution, and solution temperature. As for the amount of oxide films formed, it is desirable 1.0 - 5.0 g/m<sup>2</sup> and that it is especially 1.5 - 4.0 g/m<sup>2</sup>.

[0063] the substrate which is carried out in the above surface treatment and has an anodic oxide film as a base material used by this invention -- for much more improvement of adiathermancy etc. in an adhesive property with the upper layer, a hydrophilic property, and the difficulty of becoming dirty, although you may remain as it is If needed, expansion processing of the micro pore of the anodic oxide film indicated by an application for patent No. 65219 [ 2000 to ] and the application for patent No. 143387 [ 2000 to ], sealing of a micro pore, surface hydrophilicity-ized processing in which it is immersed in the solution containing a hydrophilic compound, etc. can be chosen suitably, and can be performed. As a suitable hydrophilic compound for the above-mentioned hydrophilicity-ized processing, polyvinyl phosphonic

acid, a compound with a sulfonic group, a saccharide compound, a citric acid, alkali-metal silicate, a zirconium fluoride potassium, phosphate / inorganic fluorine compound, etc. can be mentioned.

[0064] When using a base material with the hydrophilic property of front faces, such as polyester film, inadequate as a base material of this invention, it is desirable to apply a hydrophilic layer and to make a front face into a hydrophilic property. The hydrophilic layer which comes to apply the application liquid containing the colloid of the oxide of at least one element chosen [ application for patent / No. 10810 / 2000 to ] / from the beryllium, the magnesium, the aluminum, the silicon, the titanium, the boron, the germanium, the tin, the zirconium, the iron, the vanadium, antimony, and transition metals of a publication as a hydrophilic layer or a hydroxide is desirable. The hydrophilic layer which comes to apply the application liquid containing the colloid of the oxide of silicon or a hydroxide especially is desirable.

[0065] In this invention, before applying a sensible-heat layer, the organic undercoat which contains [ application for patent / No. 143387 / 2000 to ] / inorganic undercoat like a publication, for example, water-soluble metal salts, such as boric-acid zinc, or a carboxymethyl cellulose, a dextrin, a polyacrylic acid, etc. can be prepared if needed. Moreover, you may make this undercoat contain the aforementioned light-and-heat conversion agent.

[0066] Image formation of the negative for the lithography versions of this invention is carried out by heat. Specifically, although high illuminance flash exposure, such as direct picture Mr. record, scanning exposure by the infrared laser, and a xenon electric-discharge lamp, infrared-lamp exposure, etc. by the heat recording head etc. are used, exposure by solid-state high power infrared laser which emits infrared radiation with a wavelength of 700-1200nm, such as semiconductor laser and an YAG laser, is suitable.

[0067] A printing machine can be equipped without processing beyond it with the negative for the lithography versions of this invention by which picture exposure was carried out, and it can be printed in the usual procedure using ink and dampening water.

[0068] Moreover, the negative for the lithography versions of this invention by which picture exposure was carried out As a method of the simple lithography which does not use dampening water, for example, JP,49-26844,B, JP,49-27124,B, JP,49-27125,B, JP,53-36307,A, JP,53-36308,A, JP,61-52867,B, JP,58-2114844,A, JP,53-27803,A, JP,53-29807,A, JP,54-146110,A, The lithography using emulsion ink given in JP,57-212274,A, JP,58-37069,A, JP,54-106305,A, etc. is also possible.

[0069] Moreover, it is also possible to expose these negatives for the lithography versions with the laser carried in the printing machine after attaching on a printing machine cylinder as indicated by patent No. 2938398, and to carry out on-board development after that. Moreover, after these negatives for the lithography versions carry out development which makes water or suitable solution a developer, they can also be used for printing.

[0070]

[Example] Hereafter, although an example explains this invention in detail, this invention is not limited to these.

[0071] (Synthetic example of the blocking isocyanate compound 1) toluene 100ml -- the reaction was performed for about 3 hours until it dissolved 2 and 4-tolylene diisocyanate 8.7g and methyl-ethyl-ketone oxime 8.7g in inside and the isolation isocyanate was no longer checked at 60 degrees C after 1.0mg addition in the triethylamine in it This liquid was thrown in in the hexane after the reaction end, the blocking isocyanate compound 2 was deposited, and it collected (78% of yield).

[0072] (Synthetic example of the blocking isocyanate compound 2) tetrahydrofuran 200ml -- the reaction was performed for about 5 hours until it dissolved 2 and 4-tolylene diisocyanate 8.7g and p-nitrophenol 13.9g in inside and the isolation isocyanate was no longer checked at 60 degrees C after 1.0mg addition in the triethylamine in it This liquid was thrown in in the hexane after the reaction end, the blocking isocyanate compound 1 was deposited, and it collected (82% of yield).

[0073] (Example of manufacture of blocking isocyanate compound distribution liquid (1)) 1:1g of blocking isocyanate compounds -- 205; 1% solution [ of PVA(s) ]: -- mixed with 10g, the paint shaker was made to distribute for 30 minutes, and underwater distribution liquid was obtained

[0074] (Example of manufacture of blocking isocyanate compound distribution liquid (2)) 1:1g of



blocking isocyanate compounds -- weight-average-molecular-weight 25,000 polyacrylic-acid; -- 1% solution: -- mixed with 10g, the paint shaker was made to distribute for 30 minutes, and underwater distribution liquid was obtained

[0075] (Example of manufacture of blocking isocyanate compound distribution liquid (3)) Underwater distribution liquid as well as blocking isocyanate compound distribution liquid 1 was adjusted except having changed the block blocking isocyanate compound 1 into the block blocking isocyanate compound 2.

[0076] (Example of manufacture of blocking isocyanate compound distribution liquid (4)) methyl-ethyl-ketone: -- 5g and ethyl-acetate: -- 16g mixed liquor -- a 1:6.5 g blocking isocyanate compound and a light-and-heat conversion agent (IR-15 [ given / this / in a specification ]) -- 1g and A-41C(product made from Takemoto Fats and oils) 0.1g of anionic surface active agent pie ONIN were dissolved, and the oil phase was produced The aqueous phase of 34.0g of 3% of polyvinyl alcohol (PVA205 by Kuraray Co., Ltd.) solution was added to this, and it was made to emulsify for 10 minutes by 10000rpm with a homogenizer. After adding 22g for water, this liquid was heated flying the organic solvent at 40 degrees C for 4 hours. When solid-content concentration was measured, it was 13.7 % of the weight. Moreover, the mean particle diameter was 0.3 micrometers.

[0077] (Synthetic example of hydrophobic polymer particle distribution liquid (1)) The temperature up was carried out to 80 degrees C, having put methyl methacrylate 100g, 237g of water, and surfactant XL-102F (4.7% solution made from Lion)10g into the three necked flask, and pouring in nitrogen. Then, K2S2O8 [ 1g ] were added after about 30-minute stirring, the emulsion polymerization was performed at 80 degrees C for 6 hours, and polymethylmethacrylate particle distribution liquid of the particle size of about 0.1 micrometers and 30% of solid-content concentration was obtained.

[0078] (Synthetic example of hydrophobic polymer particle distribution liquid (2)) 114g of water was taught to the flask equipped with stirring equipment, the dropping funnel, the nitrogen introduction official, the cooling official, and the thermometer, and after the temperature up and the nitrogen purge, temperature was kept at 65 degrees C and it stirred by rotational frequency 200rpm. Then, styrene 46g and the mixture of 5g of butyl acrylates were dropped. Moreover, 0.14g of potassium persulfate which dissolved in 5g of water was dropped. After heating after this for 10 hours, it heated at 80 degrees C for 3 hours, and the particle was obtained. The particle size of the obtained particle was 0.28 micrometers, and the concentration of particle distribution liquid was 30%.

[0079] (Synthetic example of hydrophobic polymer particle distribution liquid (3)) methyl-ethyl-ketone: -- 5g and ethyl-acetate: -- polymethylmethacrylate:6.5g of weight average molecular weight 10,000 and A-41C(product made from Takemoto Fats and oils) 0.1g of anionic surface active agent pie ONIN were dissolved in 16g mixed liquor, and the oil phase was produced \*\*\*\* of 34.0g of 3% of polyvinyl alcohol (PVA205 by Kuraray Co., Ltd.) solution was added to this, and it was made to emulsify for 10 minutes by 10000rpm with a homogenizer. After adding 14g for water, this liquid was heated flying the organic solvent at 50 degrees C for 3 hours. When solid-content concentration was measured, it was 14.0 % of the weight. Moreover, the mean particle diameter was 0.29 micrometers.

[0080] (Synthetic example of hydrophobic polymer particle distribution liquid (4)) methyl-ethyl-ketone: -- 5g and ethyl-acetate: -- 16g mixed liquor -- polymethylmethacrylate:6.5g of weight average molecular weight 10,000, and a light-and-heat conversion agent (IR-15 [ given / this / in a specification ]) -- 1g and A-41C(product made from Takemoto Fats and oils) 0.1g of anionic surface active agent pie ONIN were dissolved, and the oil phase was produced \*\*\*\* of 34.0g of 3% of polyvinyl alcohol (PVA205 by Kuraray Co., Ltd.) solution was added to this, and it was made to emulsify for 10 minutes by 10000rpm with a homogenizer. After adding 22g for water, this liquid was heated flying the organic solvent at 50 degrees C for 3 hours. When solid-content concentration was measured, it was 14.0 % of the weight. Moreover, the mean particle diameter was 0.3 micrometers.

[0081] (Synthetic example of hydrophobic polymer particle distribution liquid (5)) It completely compounded by prescription similarly except having changed the polymethylmethacrylate of hydrophobic polymer particle distribution liquid (4) into the poly (methyl methacrylate/hydroxyethyl methacrylate) mole ratios 70/30 of weight average molecular weight 15,000. When solid-content

concentration was measured, it was 14.1 % of the weight. Moreover, the mean particle diameter was 0.33 micrometers.

[0082] (Synthetic example of hydrophobic polymer particle distribution liquid (6)) It completely compounded by prescription similarly except having changed the polymethylmethacrylate of hydrophobic polymer particle distribution liquid (4) into the cresol novolak resin of the m-/p-ratios 6/4 of weight average molecular weight 4000. When solid-content concentration was measured, it was 13.8 % of the weight. Moreover, the mean particle diameter was 0.26 micrometers.

[0083] (Synthetic example of hydrophobic polymer particle distribution liquid (7)) It completely compounded by prescription similarly except having changed the polymethylmethacrylate of hydrophobic polymer particle distribution liquid (4) into Epicoat 1004 (product made from oil-ized Shell Epoxy). When solid-content concentration was measured, it was 14.2 % of the weight. Moreover, the mean particle diameter was 0.32 micrometers.

[0084] (Synthetic example of hydrophobic polymer particle distribution liquid (8)) methyl-ethyl-ketone: -- 5g and ethyl-acetate: -- 16g mixed liquor -- 1:1g of compounds of a blocking isocyanate polymethylmethacrylate 6.5g of weight average molecular weight 10,000, and given [ this ] in a specification, and a light-and-heat conversion agent (IR-26 [ given / this / in a specification ]) -- 1g and A-41C(product made from Takemoto Fats and oils) 0.1g of anionic surface active agent pie ONIN were dissolved, and the oil phase was prepared \*\*\*\* of 34.0g of 3% of polyvinyl alcohol (PVA205 by Kuraray Co., Ltd.) solution was added to this, and it was made to emulsify for 10 minutes by 10000rpm with a homogenizer. After adding 26.0g for water, this liquid was heated flying the organic solvent at 40 degrees C for 3 hours. When solid-content concentration was measured, it was 14.2 % of the weight. Moreover, the mean particle diameter was 0.35 micrometers.

[0085] (Example of manufacture of a base material) Defecation processing was performed and the molten metal of JIS A1050 alloy containing 99.5% or more of aluminum, Fe 0.30% and Si 0.10%, Ti0.02%, and Cu 0.013% was cast. In order to remove unnecessary gas, such as hydrogen in a molten metal, degasifying processing was carried out, and ceramic-tube filter processing was carried out to defecation processing. Casting was performed by the direct chill casting process. 10mm facing of the ingot of 500mm of solidified board thickness was carried out from the front face, and homogenization was performed at 550 degrees C for 10 hours so that an intermetallic compound might not turn big and rough. Subsequently, after hot-rolling at 400 degrees C and carrying out intermediate annealing for 500-degree-C 60 seconds in a continuous annealing furnace, cold rolling was performed and it considered as the aluminum rolled plate of 0.30mm of \*\*\*\*. By controlling the granularity of a reduction roll, center line average surface roughness Ra after cold rolling was controlled to 0.2 micrometers. Then, in order to raise smoothness, it applied to the tension leveler.

[0086] Next, surface treatment for considering as the lithography version base material was performed. First, in order to remove the rolling oil on the front face of an aluminum plate, indirect desulfurization fat processing was performed for 50-degree-C 30 seconds in sodium aluminate solution 10%, and the period sum and desmutting processing were performed for 50-degree-C 30 seconds in sulfuric-acid solution 30%.

[0087] Subsequently, in order to make good adhesion of a base material and an image formation layer and to give water retention to the non-picture section, the so-called graining processing which split-face-izes the front face of a base material was performed. Electrolysis graining was performed by giving anode side quantity of electricity 240 C/dm<sup>2</sup> by the indirect electric supply cell by current density 20 A/dm<sup>2</sup> and the police box wave of duty ratio 1:1, having kept 1% of nitric acid, and the solution containing 0.5% of nitric-acid aluminum at 45 degrees C, and passing an aluminum web in solution. Etching processing was performed for 50-degree-C 30 seconds in sodium aluminate solution 10% after that, and the period sum and desmutting processing were performed for 50-degree-C 30 seconds in 30% % sulfuric-acid solution.

[0088] In order to raise abrasion resistance, chemical resistance, and water retention furthermore, the oxide film was made to form in a base material according to anodic oxidation. The anodic oxide film of 2.5 g/m<sup>2</sup> was created by performing electrolysis processing by direct current of 14 A/dm<sup>2</sup> by the

indirect electric supply cell, having used 20% solution of sulfuric acids at 35 degrees C as an electrolyte, and \*\*\*\*(ing) an aluminum web in an electrolyte. Silicate processing was performed in order to secure the hydrophilic property as the printing version non-picture section after this. Processing was \*\*\*\*(ed) so that 1.5% solution of No. 3 silicate of soda might be kept at 70 degrees C and the contact time of an aluminum web might become 15 seconds, and it was rinsed further. The coating weight of Si was 10 mg/m<sup>2</sup>. Center line surface roughness Ra of the base material (1) produced as mentioned above was 0.25 micrometers.

[0089] [Example 1] On the base material obtained in the above-mentioned example of manufacture, after preparing the following sensible-heat layer application liquid (1), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0090]

(Sensible-heat layer application liquid (1))

Hydrophobic polymer particle distribution liquid (1) 23.3g Blocking isocyanate compound distribution liquid (1) 11.0g Light-and-heat conversion agent (IR-10 [ given / this / in a specification ]) 1.00g 205; 4% solution of PVA(s) 22.5g Distilled water 124g. [0091] [Example 2] Except having changed the blocking isocyanate compound distribution liquid in the sensible-heat layer application liquid of an example 1 (1) into blocking isocyanate compound distribution liquid (2), and having changed PVA205 into the polyacrylic acid of weight average molecular weight 25000, sensible-heat layer application liquid (2) was prepared similarly, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced by an application and dryness.

[0092] [Example 3] Except having changed the hydrophobic polymer particle distribution liquid (1) of an example 1 into hydrophobic polymer particle distribution liquid (2), sensible-heat layer application liquid (3) was prepared similarly, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced by an application and dryness.

[0093] [Example 4] On the same base material as an example 1, after preparing the following sensible-heat layer application liquid (4), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0094]

(Sensible-heat layer application liquid (4))

Hydrophobic polymer particle distribution liquid (3) 54.6g Blocking isocyanate compound distribution liquid (1) 1.0g Light-and-heat conversion agent (IR-10 [ given / this / in a specification ]) 1.0g Distilled water 124g. [0095] [Example 5] On the same base material as an example 1, after preparing the following sensible-heat layer application liquid (5), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0096]

(Sensible-heat layer application liquid (5))

Hydrophobic polymer particle distribution liquid (4) 63.6g Blocking isocyanate compound distribution liquid (1) 11.0g Distilled water 106g. [0097] [Examples 6-8] Except having changed respectively the hydrophobic polymer particle distribution liquid (4) of an example 5 into hydrophobic polymer particle distribution liquid (5) - (7), each sensible-heat layer application liquid (6) - (8) was prepared similarly, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced by an application and dryness.

[0098] [Example 9] Except having changed the blocking isocyanate compound distribution liquid in the sensible-heat layer application liquid of an example 5 (1) into blocking isocyanate compound distribution liquid (3), sensible-heat layer application liquid (9) was prepared similarly, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced by an application and dryness.

[0099] [Example 10] After preparing the following sensible-heat layer application liquid (10) using

ERASU TRON H-3 (20% Dai-Ichi Kogyo Seiyaku Co., Ltd. make of solid-content concentration) which is the urethane prepolymer which protected the isocyanate by the blocking agent as a blocking isocyanate compound, the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0100]

(Sensible-heat layer application liquid (10))

Hydrophobic polymer particle distribution liquid (5) 63.6g H-3 5.0g Distilled water 110g. [0101]

[Example 11] After preparing the following sensible-heat layer application liquid (11), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0102]

(Sensible-heat layer application liquid (11))

Hydrophobic polymer particle distribution liquid (8) 67.6g Distilled water 113g. [0103] [Example 12]

After preparing the following sensible-heat layer application liquid (12), the bar application was carried out, it dried on 60 degrees C and the conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0104]

(Sensible-heat layer application liquid (12))

Hydrophobic polymer particle distribution liquid (6) 63.6g Blocking isocyanate compound distribution liquid (4) 10.5g Distilled water 110g. [0105] [Example 1 of comparison] After preparing the following sensible-heat layer application liquid (13), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0106]

(Sensible-heat layer application liquid (13))

Hydrophobic polymer particle distribution liquid (1) 23.3g Light-and-heat conversion agent (IR-10 [ given / this / in a specification ]) 1.0g 205; 4% solution of PVA(s) 25g Distilled water 119g. [0107]

[Example 2 of comparison] After preparing the following sensible-heat layer application liquid (14), the bar application was carried out, it dried on 60 degrees C and the conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0108]

(Sensible-heat layer application liquid (14))

Hydrophobic polymer particle distribution liquid (3) 63.6g Light-and-heat conversion agent (IR-10 [ given / this / in a specification ]) 1.0g Distilled water 95.2g. [0109] [Example 3 of comparison]

After preparing the following sensible-heat layer application liquid (15), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0110]

(Sensible-heat layer application liquid (15))

Hydrophobic polymer particle distribution liquid (4) 63.6g Distilled water 96g. [0111] [Example 4 of comparison] After preparing the following sensible-heat layer application liquid (16), the bar application was carried out, it dried on 60-degree-C conditions for 120 seconds in oven, and the original edition for the lithography versions of dryness coverage 0.8 g/m<sup>2</sup> of a sensible-heat layer was produced.

[0112]

(Sensible-heat layer application liquid (16))

Blocking isocyanate compound distribution liquid (1) 11.0g Light-and-heat conversion agent (IR-10 [ given / this / in a specification ]) 1.00g 205; 4% solution of PVA(s) 225g Distilled water 24g. [0113]

Do in this way. The obtained original edition for the lithography versions in which on-board development is possible in trend setter by Creo Co., Ltd. 3244VFS which carried water cooling type

40W infrared semiconductor laser After exposing on condition that output 9W, outside drum rotational frequency 210rpm, printing plate energy 100 mJ/cm<sup>2</sup>, and resolution 2400dpi, After attaching in the cylinder of printing machine SOR-M made from high DERUBERUGU and supplying dampening water, without processing, ink was supplied and it printed by supplying paper further. About all negatives, on-board development could be carried out satisfactory and it was able to print. The number of sheets (\*\*\*\*-proof) of the printed matter obtained with each negative was evaluated. The above-mentioned sensible-heat layer content constituent and the evaluation result of \*\*\*\*-proof are shown in Table 1.

[0114]

[Table 1]

(表 1)

	微粒子	親水性 樹脂	IR	アロキ化 NCO 化合物分散液	耐刷枚数
実施例 1	(1)*1 PMMA	PVA	IR-10	アロキ NCO (1)	6000 枚
実施例 2	(1) PMMA	PAA	IR-10	アロキ NCO (2)	5000 枚
実施例 3	(2) PSt/nBuAA	PVA	IR-10	アロキ NCO (1)	6000 枚
実施例 4	(3) PMMA	PVA	IR-10	アロキ NCO (1)	4000 枚
実施例 5	(4) PMMA/(IR-15)	PVA	なし	アロキ NCO (1)	8000 枚
実施例 6	(5) P(MMA/HEMA)/(IR-15)	PVA	なし	アロキ NCO (1)	1.2 万枚
実施例 7	(6) ノボラック樹脂/(IR-15)	PVA	なし	アロキ NCO (1)	1.3 万枚
実施例 8	(7) エコート 1004/(IR-15)	PVA	なし	アロキ NCO (1)	1.3 万枚
実施例 9	(4) PMMA/(IR-15)	PVA	なし	アロキ NCO (3)	8000 枚
実施例 10	(5) P(MMA/HEMA)/(IR-15)	PVA	なし	H-3(アロキ NCO)	1.3 万枚
実施例 11	(8) PMMA/(IR-26)/アロキ NCO1	PVA	なし	(微粒子中)	7000 枚
実施例 12	(6) ノボラック樹脂/(IR-15)	PVA	なし	アロキ NCO (4)	1.8 万枚
比較例 1	(1) PMMA	PVA	IR-10	なし	1000 枚
比較例 2	(3) PMMA	PVA	IR-10	なし	1000 枚
比較例 3	(4) PMMA/(IR-15)	PVA	なし	なし	2000 枚
比較例 4	なし	PVA	IR-10	アロキ NCO (1)	300 枚

(註) \*1 : ( )内の数字は疎水性ポリマー粒子分散液合成例の番号である。

[0115] Although each original edition for the lithography versions of the examples 1-11 of this invention obtained the result which on-board development nature is good, and \*\*\*\*-proof should be [ the result ] excellent and satisfy so that clearly from the result of Table 1, each original edition for the lithography versions of the examples 1-4 of comparison was a dissatisfied result in \*\*\*\*-proof.

[0116]

[Effect of the Invention] As explained above, it is the original edition for the lithography versions of this invention. the isocyanate machine which the picture could be formed by scanning laser exposure based on digital exposure, the hydrophobic polymer particle contained in a sensible-heat layer carried out heat weld partially at least with the heat generated by irradiation of laser exposure, and the blocking agent of a blocking isocyanate compound dissociated simultaneously, and separated -- the functional group of a hydrophilic resin -- reacting -- a hydrophilic resin -- hydrophobing -- or a bridge is made to construct By this, the unexposed section does so the effect of becoming what excelled [ high sensitivity ] in \*\*\*\*-proof, while good on-board development nature is shown.

[Translation done.]